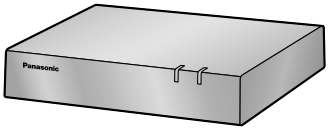
Panasonic

Installation Manual



E1 Trunk Adaptor/PRI Adaptor

Model No. KX-NS8188
KX-NS8290

Thank you for purchasing this Panasonic product.
Please read this manual carefully before using this product and save this manual for future use.

Compatible PBX:
KX-NS1000 PCMPR Software File Version 002.00000 or later

Introduction

This Installation Manual is designed to serve as an overall technical reference for the KX-NS8188 E1 Trunk Adaptor/KX-NS8290 PRI Adaptor (Trunk Adaptor) for KX-NS1000. A Trunk Adaptor provides an E1/PRI trunk interface to the KX-NS1000 and enables flexible trunk configuration. This manual provides instructions for installing the hardware, and programming the Trunk Adaptor using Web Maintenance Console.

About the software version of your PBX

The contents of this manual apply to PBXs with a certain software version, as indicated on the cover of this manual. Please confirm the software version of your PBX.
You can connect the Trunk Adaptor to the PBX without any activation keys.

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Table of Contents

1 Safety Precautions 5
1.1 For Your Safety 6
1.2 Important Safety Instructions 12
1.3 Precautions 13
1.4 Data Security 15
1.5 Additional Information 16
2 System Outline 17
2.1 Basic System Construction 18
2.1.1 Model Line-up 18
2.1.2 Optional Equipment 18
2.1.3 System Connection Diagram 18
2.1.4 Service Feature 20
2.1.4.1 E1 Gateway 20
2.1.4.2 PRI Gateway 20
2.2 Specifications 22
2.2.1 General Description 22
2.2.2 System Capacity 22
3 Installation 23
3.1 Before Installation 24
3.2 Installation of the Trunk Adaptor 25
3.2.1 Unpacking 25
3.2.2 Names and Locations 25
3.2.3 LED Indications 26
3.2.4 Types of Connectors 27
3.2.5 Placing the Trunk Adaptor on a Desktop 27
3.2.6 Wall Mounting 28
3.2.7 Wiring Requirement 30
3.3 Starting the Trunk Adaptor 31
3.3.1 Installation Procedure and Connection Diagrams 31
4 Programming with Web Maintenance Console 33
4.1 Overview of Web Maintenance Console 34
4.2 PC Connection 36
4.3 Starting Web Maintenance Console 38
4.4 Programming the Trunk Adaptor 39
4.4.1 Easy Setup Wizard 39
4.4.2 Setting List 40
4.5 Programming for the KX-NS1000 58
5 Troubleshooting 61
5.1 Installation 62
5.2 Error Messages 62
Index.....63

Table of Contents

Section 1

Safety Precautions

This section provides important information intended to prevent personal injury and property damage.

1.1 For Your Safety

To prevent personal injury and/or damage to property, be sure to observe the following safety precautions.

The following symbols classify and describe the level of hazard and injury caused when this unit is operated or handled improperly.

⚠ **WARNING**	This notice means that misuse could result in death or serious injury.
⚠ **CAUTION**	This notice means that misuse could result in injury or damage to property.

The following types of symbols are used to classify and describe the type of instructions to be observed.

This symbol is used to alert users to a specific operating procedure that must not be performed.

This symbol is used to alert users to a specific operating procedure that must be followed in order to operate the unit safely.

⚠ WARNING

- Do not install the system in the following locations:
  - Areas where shocks or vibrations are frequent or strong. Such activity may lead to the product falling over and causing injury, or may impair the product's performance.
  - Areas with high amounts of dust. High amounts of dust can lead to fire or electric shock, and impair the performance of the product.
- Do not connect or disconnect the AC plug with wet hands.
- Do not touch the Trunk Adaptor, AC adaptor or AC adaptor cord during a lightning storm.
- Do not allow anything to rest on the AC adaptor cord or LAN cable. Do not locate the Trunk Adaptor where the AC adaptor cord or LAN cable may be stepped on or tripped on.
- When installing the Trunk Adaptor with an external AC adaptor, the AC adaptor should be plugged into a wall outlet or floor-mounted AC outlet. Do not connect the AC adaptor to a ceiling-mounted AC outlet, as the weight of the adaptor may cause it to become disconnected.
- Make sure that you do not short the cables.
- Never attempt to insert wires, pins, etc. into the vents or other holes of the Trunk Adaptor.
- Do not splash water on the AC adaptor or the AC adaptor cord, nor get them wet. Doing so can result in fire, electric shock, or injury. If they do get wet, immediately disconnect the AC adaptor, and contact an authorised service centre.
- Do not touch the AC adaptor for extended periods of time. Doing so can lead to low-degree burns.
- Do not make power connections that exceed the ratings for the AC outlet or power equipment. If the power rating is exceeded, it can cause a fire due to heat buildup.
- Care should be taken so that objects do not fall onto, and liquids are not spilled into, the Trunk Adaptor. Do not subject the Trunk Adaptor to excessive smoke, dust, moisture, mechanical vibration, shock, or direct sunlight.
- Do not place heavy objects on top of the Trunk Adaptor.
- Do not mount the Trunk Adaptor in a manner other than that described in this manual.

- The Trunk Adaptor must only be installed and serviced by qualified service personnel. The Trunk Adaptor should be used as-is from the time of purchase; it should not be disassembled or modified. Disassembly or modification can cause a fire, electric shock, or damage to the Trunk Adaptor.
- Make sure that the wall that the Trunk Adaptor will be attached to is strong enough to support the Trunk Adaptor (approx. 500 g). If not, it is necessary for the wall to be reinforced.
- Only use the wall-mounting equipment (screws, washers) included with the Trunk Adaptor.
- Be careful not to drop any components. Dropping components may damage them or cause an injury.
- Disconnect the Trunk Adaptor from the AC outlet, disconnect the LAN cable, and contact the dealer if:
  - The AC adaptor cord or AC plug becomes damaged or frayed.
  - The Trunk Adaptor is exposed to rain, water, or any other liquid.
  - The Trunk Adaptor is dropped or damaged.
  - Internal components are exposed due to damage.
  - The Trunk Adaptor does not operate properly.
  - Performance deteriorates.

- Disconnect the Trunk Adaptor from the AC outlet and disconnect the LAN cable if the Trunk Adaptor emits smoke, an abnormal smell, or makes unusual noise. These conditions can cause fire or electric shock. Confirm that smoke has stopped and contact an authorised service centre.
- Clean the AC plug periodically with a soft, dry cloth to remove dust and other debris.
- If using an AC adaptor, use only the optional AC adaptor KX-A239AL (PQLV206AL), KX-A239BX (PQLV206CE), KX-A239CE (PQLV206CE), KX-A239EJ (PQLV206E), KX-A239UK (PQLV206E), KX-A239X (PQLV206), or KX-A420BR (PSLP1662). Since the AC adaptors that can be used vary depending on the country/area, contact an authorised service centre for details.
- If damage to the Trunk Adaptor exposes any internal parts, immediately disconnect the cable or cord. If the power is supplied from the network to the Trunk Adaptor (Power-over-Ethernet), disconnect the Ethernet cables. Otherwise, disconnect the AC adaptor cord. Then return the Trunk Adaptor to a service centre.
- The Trunk Adaptor should only be connected to a power supply of the type shown on the label on the Trunk Adaptor.
- Completely insert the AC adaptor/power plug into the AC outlet. Failure to do so may cause electric shock and/or excessive heat resulting in a fire.
- When installing or testing a Trunk Adaptor with an external AC adaptor, the AC adaptor should be plugged into a wall outlet or floor-mounted AC outlet. Do not connect the AC adaptor to a ceiling-mounted AC outlet, as the weight of the adaptor may cause it to become disconnected.
- The DC jack cover poses a choking hazard. Keep the DC jack cover out of reach of children.
- When the Trunk Adaptor is no longer in use, make sure to detach it from the wall.

⚠ CAUTION

- Do not install the system in the following locations:
  - In direct sunlight and hot, cold, or humid places. (Temperature range: 0 °C to 40 °C)
  - Areas where sulphuric gases may be present, such as near thermal springs.
  - Near devices that generate high frequencies, such as sewing machines or electric welders.
  - Locations where other objects will obstruct the area around the Trunk Adaptor. Be especially careful to leave at least 5 cm to the sides of the Trunk Adaptor for ventilation.
- Do not stretch or bend the cables. Also, do not allow anything to rest on the cables.
- Do not bundle cables that are connected to the Trunk Adaptor with the AC power cords of machines located nearby.
- To prevent malfunction, deformity, overheating, rust, and discolouration, do not install or place equipment in the following types of locations:
  - Locations where air ventilation is poor.
  - Locations that may be exposed to sulphurous gas, such as near hot springs.
  - Near devices that emit heat, such as heaters.
  - Near devices that emit electromagnetic noise, such as radios or televisions.
  - Near devices that emit high-frequency noise, such as sewing machines or welders.
- The Trunk Adaptor and the cables should never be placed near or over a radiator or other heat source.
- The Trunk Adaptor should not be placed outdoors (use indoors).
- The Trunk Adaptor should not be placed near high-voltage equipment.

- The Trunk Adaptor should be kept free of dust, moisture, high temperature (more than 40 °C), low temperature (less than 0 °C), and vibration, and should not be exposed to direct sunlight.
- Before touching the product, discharge static electricity by touching ground or wearing an earthing strap. Failure to do so may cause the Trunk Adaptor to malfunction due to static electricity.
- When relocating the equipment, first disconnect the telecom connection before disconnecting the power connection. When the unit is installed in the new location, reconnect the power first, and then reconnect the telecom connection.
- Make sure that the surface behind the Trunk Adaptor is not made of wood.
- When driving the screws into the wall, be careful to avoid touching any metal laths, wire laths or metal plates in the wall.
- When mounting the Trunk Adaptor on a wall, be sure to run the cables down the side of the Trunk Adaptor. Do not run the cables down the front of it.
- When the Trunk Adaptor is placed on a desktop, make sure that the Trunk Adaptor is placed as indicated in "3.2.5 Placing the Trunk Adaptor on a Desktop". Do not place it on its side or upside down.
- When placing the Trunk Adaptor on a desktop, be sure to run the cables on the side of the Trunk Adaptor. Do not run the cables on top or under it.
- It is strongly recommended to use SSL encrypted communication when the PC is accessing the Trunk Adaptor via the Internet. To use SSL encryption, routers must have a port set up for https communication.
- Avoid using the same AC outlet for computers and other office equipment, as noise generated by such equipment may hamper system performance or interrupt the system.

- Unplug the system from its power source when wiring, and plug the system back in only after all wiring is completed.
- Use cables that are fire-resistant or fireproof.
- Make sure the cables are securely fastened to the wall.
- The AC adaptor is used as the main disconnect device. Ensure that the AC adaptor is located near the Trunk Adaptor and is easily accessible.
- Disconnect the AC adaptor cord and all cables from the Trunk Adaptor before cleaning. Clean the Trunk Adaptor with a soft, dry cloth. Do not use liquid, aerosol cleaners, abrasive powders, or chemical agents to clean the Trunk Adaptor.
- When left unused for a long period of time, disconnect the Trunk Adaptor from the AC outlet. When the Trunk Adaptor receives power from a PoE power supply, disconnect the LAN cable.
- To ensure the security of private conversations, only connect the Trunk Adaptor to a secure network.
- To prevent unauthorised access, only connect the Trunk Adaptor to a network that is properly managed.
- Make sure all personal computers that are connected to the Trunk Adaptor employ up-to-date security measures.
- To avoid unauthorised access and possible abuse of your phone system, we strongly recommend:
  - Keeping the password secret.
  - Changing your password regularly.
  - Selecting a complex, random password that cannot be easily guessed.
  - Changing the installer password after logging in to Web Maintenance Console for the first time.

Notice

SAFETY REQUIREMENTS

- Before connecting the Trunk Adaptor, confirm that the Trunk Adaptor supports the intended operating environment.
- If the Trunk Adaptor does not operate properly, disconnect the AC adaptor cord and LAN cable, then connect again.
- The Trunk Adaptor may not operate in the event of a power failure.
- Do not move the Trunk Adaptor while it is in use.
- If you cannot make or receive calls, refer to the troubleshooting for this Trunk Adaptor or the PBX. If the problem is not resolved, consult your dealer.

SECURITY REQUIREMENTS

- Keep a copy of all important data (such as your network information) before sending the machine for repair.
- The Trunk Adaptor can store your private/confidential information. To protect your privacy/ confidentiality, we recommend that you initialise the Trunk Adaptor to erase all user data and restore the factory default settings before you dispose, transfer or return the Trunk Adaptor.

Note

In this manual, the suffix of each model number (e.g., KX-NS8290**CE**) is omitted unless necessary.

1.2 Important Safety Instructions

When using your telephone equipment, basic safety precautions should always be followed to reduce the risk of fire, electric shock and injury to persons, including the following:

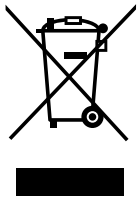
- Do not use the product near water, for example, near a bathtub, wash bowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool.
- Avoid using wired telephones during an electrical storm. There is a remote risk of electric shock from lightning.
- Do not use a telephone in the vicinity of a gas leak to report the leak.
- Rack Mount Instructions—The following or similar rack-mount instructions are included with the installation instructions:
  Elevated Operating Ambient—If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tma) specified by the manufacturer.

SAVE THESE INSTRUCTIONS

1.3 Precautions

For users in the European Union only

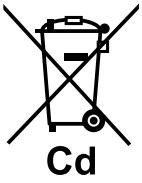
Information for Users on Collection and Disposal of Old Equipment and used Batteries



These symbols on the products, packaging, and/or accompanying documents mean that used electrical and electronic products and batteries should not be mixed with general household waste.
For proper treatment, recovery and recycling of old products and used batteries, please take them to applicable collection points, in accordance with your national legislation and the Directives 2002/96/EC and 2006/66/EC.
By disposing of these products and batteries correctly, you will help to save valuable resources and prevent any potential negative effects on human health and the environment which could otherwise arise from inappropriate waste handling.
For more information about collection and recycling of old products and batteries, please contact your local municipality, your waste disposal service or the point of sale where you purchased the items.
Penalties may be applicable for incorrect disposal of this waste, in accordance with national legislation.

For business users in the European Union
If you wish to discard electrical and electronic equipment, please contact your dealer or supplier for further information.

Information on Disposal in other Countries outside the European Union
These symbols are only valid in the European Union. If you wish to discard these items, please contact your local authorities or dealer and ask for the correct method of disposal.



Note for the battery symbol (bottom two symbol examples):
This symbol might be used in combination with a chemical symbol. In this case it complies with the requirement set by the Directive for the chemical involved.

For users in Germany only

- Machine Noise Information Ordinance, 3rd GPSGV: The highest sound pressure level is 70 dB (A) or less according to EN ISO 7779.
- This equipment is not for use at video display work stations according to BildscharbV.

For users in New Zealand only

- This equipment shall not be set to make automatic calls to the Telecom ‘111’ Emergency Service.
- The grant of a Telepermit for any item of terminal equipment indicates only that Telecom has accepted that the item complies with minimum conditions for connection to its network. It indicates no endorsement of the product by Telecom, nor does it provide any sort of warranty. Above all, it provides no assurance that any item will work correctly in all respects with another item of Telepermitted equipment of a different make or model, nor does it imply that any product is compatible with all of Telecom’s network services.
- This equipment is not capable, under all operating conditions, of correct operation at the higher speeds for which it is designed. Telecom will accept no responsibility should difficulties arise in such circumstances.
- Using the toll services of a company other than Telecom:
  If the PBX is set up to use the toll services of a company other than Telecom, the telephone numbers dialled from the Caller Display listings within the PBX will be directed through the toll services of the other

company because the telephone numbers include the toll access digit and area code digit. A toll charge may be incurred. Please check with the toll carrier concerned.

- APPLICABLE ONLY TO TELECOM CUSTOMERS WHO HAVE AUTOMATIC ACCESS TO OTHER CARRIERS FOR TOLL CALLS
  When calling back a number from the Caller ID list, all numbers prefixed with "0 + AREA CODE" will be automatically forwarded to your toll carrier. This includes numbers in your local calling area. The zero + area code should either be removed when calling back local numbers, or check with your toll carrier that a charge will not be levied.
- All persons using this device for recording telephone conversations shall comply with New Zealand law. This requires that at least one party to the conversation is to be aware that it is being recorded. In addition, the principles enumerated in the Privacy Act 1993 shall be complied with in respect to the nature of the personal information collected, the purpose for its collection, how it is used, and what is disclosed to any other party.

1.4 Data Security

In order to use the Trunk Adaptor safely and correctly, the Security Requirements below must be observed. Failure to do so may result in loss, leakage, falsification or theft of user information.

What is User Information?

User Information is defined as system data and error data information stored on the Trunk Adaptor.

Requirements

1. To prevent illegal access from the Internet, activate a Firewall.
2. To avoid unauthorised access and possible abuse of the Trunk Adaptor, we strongly recommend:
   a. Keeping the password secret.
   b. Selecting a complex, random password that cannot be easily guessed.
   c. Changing your password regularly.
3. When user information is sent from the Trunk Adaptor to a PC, the confidentiality of that information becomes the responsibility of the customer. Before disposing of the PC, ensure that data cannot be retrieved from it by formatting the hard disk and/or rendering it physically unusable.

1.5 Additional Information

For Users in Canada Only

This product meets the applicable Industry Canada technical specifications.
This Class A digital apparatus complies with Canadian ICES-003.

Notice

Attachment of non-IC certified/registered equipment is illegal in some areas of Canada. Please consult your Telephone Company.

CAUTION

Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

Section 2

System Outline

This section provides general information on the Trunk Adaptor, including the system capacity and specifications.

2.1 Basic System Construction

2.1.1 Model Line-up

The following table shows the different types of Trunk Adaptor.

Model No.	Type
KX-NS8188X	E1 Trunk Adaptor
KX-NS8290CE	PRI Adaptor (30 ch)
KX-NS8290X	PRI Adaptor (23 ch)

2.1.2 Optional Equipment

AC Adaptor	• KX-A239AL (PQLV206AL) • KX-A239BX (PQLV206CE) • KX-A239CE (PQLV206CE) • KX-A239EJ (PQLV206E) • KX-A239UK (PQLV206E) • KX-A239X (PQLV206) • KX-A420BR (PSLP1662)

Note

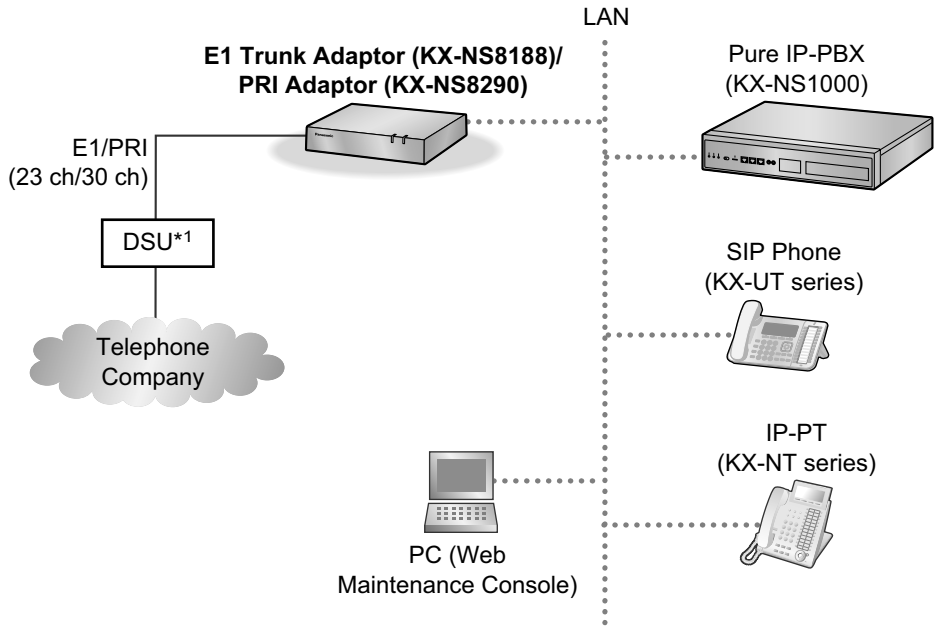
To order an optional AC adaptor, please order using the "KX-A239xx/KX-A420BR" model number (not "PQLV206xx/PSLP1662"). For users in Argentina, power can only be supplied by PoE.

2.1.3 System Connection Diagram

The following diagram shows the connection configuration image of a system containing a KX-NS8188/ KX-NS8290. Multiple Trunk Adaptors can be connected to one KX-NS1000.

Note

You can connect the Trunk Adaptor to the PBX without the need for activation keys.

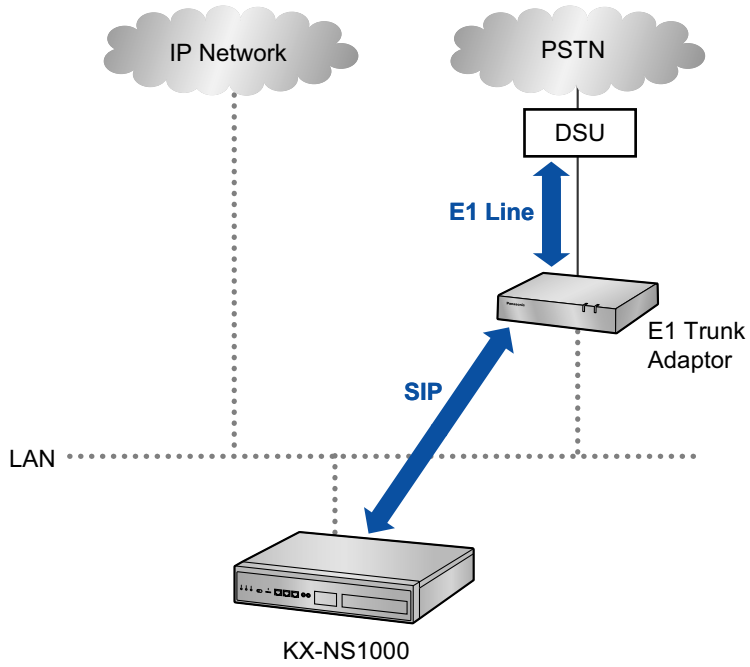


*1 DSU: Digital Service Unit

2.1.4 Service Feature

2.1.4.1 E1 Gateway

The Trunk Adaptor for E1 trunks allows a KX-NS1000 to connect to an E1 line as it converts data between the SIP and E1 protocols.



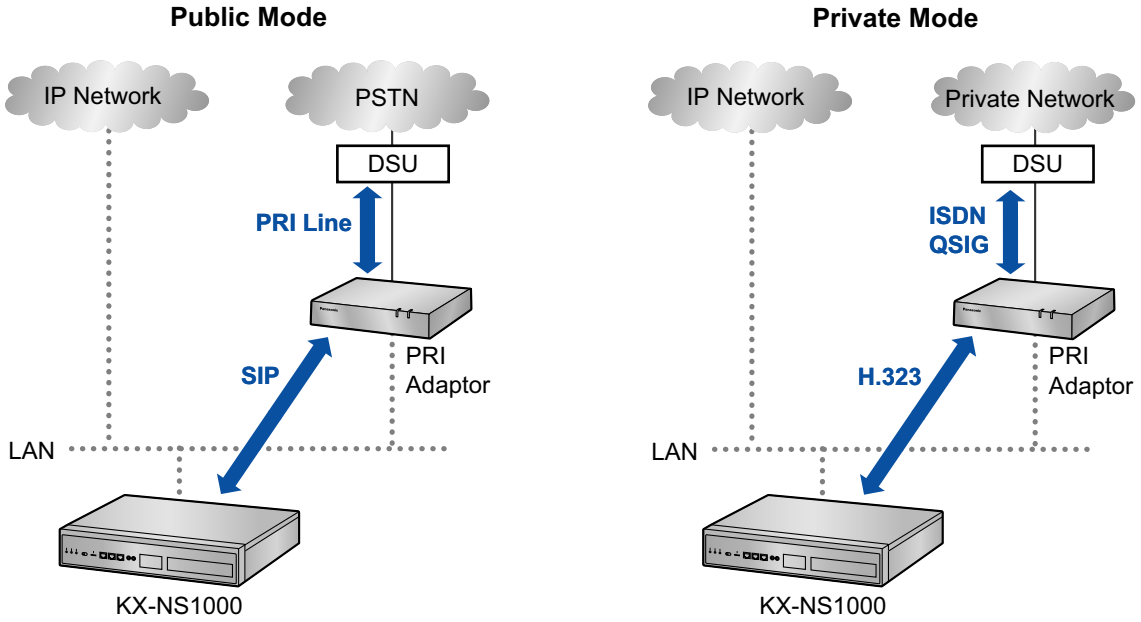
The following table shows features supported by the E1 Trunk Adaptor.
Note that the private network feature is not available.

Features	
Signalling	DR2
Dial type	MFC-R2
	DTMF
Incoming call	
Outgoing call	
Caller Number Notification (ANI)	
Deny collect call for Brazil	
Outgoing call auto disconnect	

2.1.4.2 PRI Gateway

The Trunk Adaptor for PRI Trunks—**Public Mode** allows a KX-NS1000 to connect to a PRI line as it converts data between the SIP and ISDN protocols.

The Trunk Adaptor for PRI Trunks—**Private Mode** allows a KX-NS1000 to connect to a PRI QSIG network as it converts data between the H.323 and ISDN QSIG protocols.



The following table shows features supported by the PRI Adaptor.

Features	
Mode	CO
	QSIG-Master/Slave
Incoming call	
Outgoing call	
ISDN carrier service	CLIP/CLIR
	CNIP/CNIR
	Advice of Charge (AOC)
	E-911
QSIG private service	CLIP/CLIR
	COLP/COLR
	CNIP/CNIR
	CONP/CONR
	Call Forwarding (CF)
	Call Transfer (CT)
	Completion of Calls to Busy Subscriber (CCBS)
	Network Direct Station Selection (NDSS)
	Centralised Voice Mail

2.2 Specifications

2.2.1 General Description

CPU	ARM11 450 MHz
Network port	1 port (RJ45 connector) IEEE802.3 10/100BASE-TX Auto Negotiation, Auto MDI/MDI-X Status LED: LINK, 100
Line interface	1 port (RJ45 connector)
Framer	E1/T1 framer
NT/TE mode	E1/PRI Public mode: TE QSIG Master: TE QSIG Slave: NT
Loop back mode	Local loop back, Remote loop back
System Initialise switch	Push switch (non-latching)
Power consumption	PoE: Maximum 6.4 W AC adaptor: Maximum 6.75 W
Power over Ethernet	IEEE 802.3af Class 2
Dimension	210 mm (W) × 44 mm (H) × 150 mm (D)
Weight	500 g
Temperature	0 °C to 40 °C
Humidity	10 % – 90 % RH

2.2.2 System Capacity

Model No.	**Maximum Channel Number**	
	PBX Connection	**Trunk Connection**
KX-NS8188X	30 ch	30 ch
KX-NS8290CE	30 ch	30 ch
KX-NS8290X	23 ch	23 ch

Section 3

Installation

This section describes the procedures to connect the Trunk Adaptor to the PBX.

3.1 Before Installation

Please read the following notes concerning installation and connection before installing the Trunk Adaptor. Be sure to comply with all applicable laws, regulations, and guidelines.

Notice

Panasonic assumes no responsibility for injuries or property damage resulting from failures arising out of improper installation or operation inconsistent with this documentation.

Installation Precautions

The Trunk Adaptor can be mounted on a wall or placed on a desktop, and should be installed in a location where it is accessible for inspections and maintenance.
To prevent malfunction, noise, or discolouration, follow the instructions below:

WARNING

Do not install the system in the following locations:

- **Areas where shocks or vibrations are frequent or strong. Such activity may lead to the product falling over and causing injury, or may impair the product's performance.**
- **Areas with high amounts of dust. High amounts of dust can lead to fire or electric shock, and impair the performance of the product.**

CAUTION

Do not install the system in the following locations:

- In direct sunlight and hot, cold, or humid places. (Temperature range: 0 °C to 40 °C)
- Areas where sulphuric gases may be present, such as near thermal springs.
- Near devices that generate high frequencies, such as sewing machines or electric welders.
- Locations where other objects will obstruct the area around the Trunk Adaptor. Be especially careful to leave at least 5 cm to the sides of the Trunk Adaptor for ventilation.

Notice

Do not install the system in the following locations:

- On or near computers, or other office equipment, as well as microwave ovens or air conditioners. (It is preferable not to install the system in the same room as the above equipment.)
- Within 1.8 m of radios and televisions. (Both the Trunk Adaptor and the PBX should be at least 1.8 m away from such devices.)

Wiring Precautions

Be sure to follow these instructions when wiring the unit:

CAUTION

- Avoid using the same AC outlet for computers and other office equipment, as noise generated by such equipment may hamper system performance or interrupt the system.
- Unplug the system from its power source when wiring, and plug the system back in only after all wiring is completed.

3.2 Installation of the Trunk Adaptor

3.2.1 Unpacking

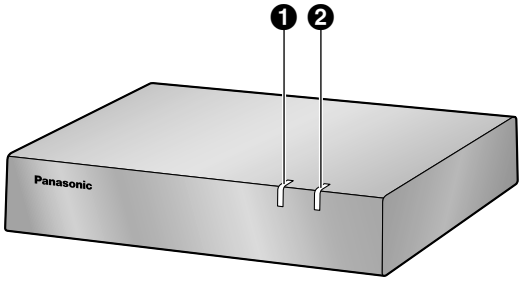
Unpack the box and check the items below:
Main Unit × 1
Screw × 2
Washer × 2

Notice

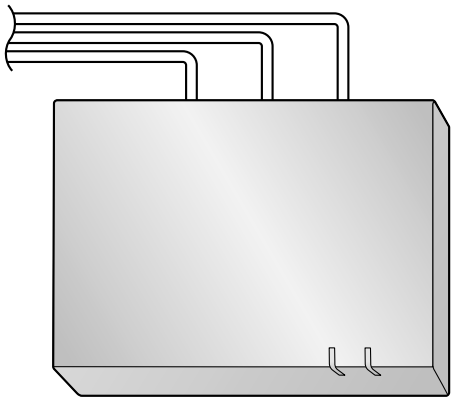
After unpacking the product, dispose of the packing materials appropriately.

3.2.2 Names and Locations

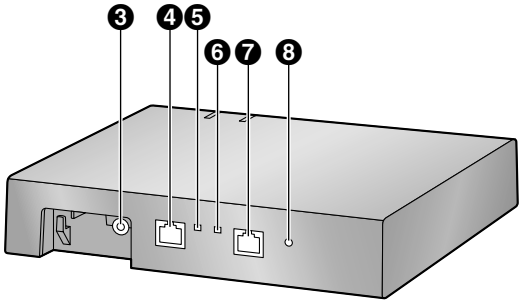
Front Side



Front Side when Wall Mounted



Back Side



No.	Name	Description
❶	SYSTEM LED	System operating status indication
❷	LINE LED	Alarm, synchronisation, and data link status indication
❸	DC Jack (9V)	DC input terminal
❹	LAN Port	Ethernet interface
❺	LAN LED (LINK)	Ethernet link status indication

No.	Name	Description
❻	LAN LED (100)	Ethernet data transmission speed indication
❼	LINE Port	E1 line interface (KX-NS8188X)
		PRI23 line interface (KX-NS8290X)
		PRI30 line interface (KX-NS8290CE)
❽	INITIALIZE	System Initialise switch

3.2.3 LED Indications

Indication		Status		Colour
SYSTEM		Power off		Off
		Awaiting system initialisation		Quick Amber Flashing (5 s)
		Pushing the System Initialise switch		Off (2 s) → Amber On
		Starting up	Before starting Linux	Amber On
			After starting Linux*1	Slow Amber Flashing
		Starting up completed	Awaiting Easy Setup	Slow Green Flashing
			Running (In Service)	Green On
			System initialisation failed	Quick Red Flashing
		Malfunction occurring (Fault)*2		Red On
		Halting operation (Out of Service)		Amber On
		Shutting down		Slow Amber Flashing → Amber On
LINE		Not Running (Out of Service/Fault)		Off
		Running (In Service)—all ports are idle		Green On
		Running (In Service)—a port is in use		Slow Green Flashing
LAN	LINK	Off-line		Off
		Linked normally		Green On
		Communicating		Green Flashing
	100	Data transmission speed: 10 Mbps		Off
		Data transmission speed: 100 Mbps		Yellow On

*1 The LED flashes amber for about one minute.

*2 Faults can be caused by the following:

- There is a problem with the Trunk Adaptor.
- There is a problem with the PRI/E1 line, such as a disconnected cable.
- An E1 port with **DR2** set as the **Channel Type** does not exist. (See "4.4.2 Setting List—Configuration—Trunk Interface".)

Note

- LED flashing patterns are as follows:
  - Slow Flashing: 60 times per minute
  - Quick Flashing: 240 times per minute
- For information about LED indications when performing a program update, see "4.4.2 Setting List—System Control—Program Update".

3.2.4 Types of Connectors

Please refer to "Types of Connectors" in the Installation Manual of the KX-NS1000 PBX. The connector type for the Trunk Adaptor is RJ45.

3.2.5 Placing the Trunk Adaptor on a Desktop

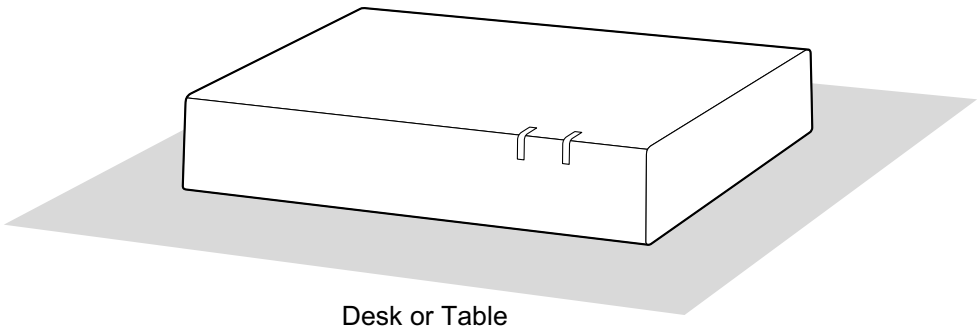
When placing the Trunk Adaptor on a desktop, make sure to follow these instructions.

WARNING

Be careful not to drop any components. Dropping components may damage them or cause an injury.

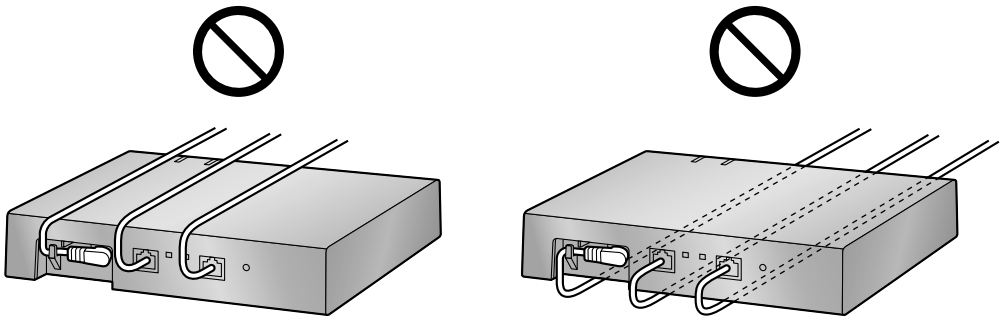
CAUTION

- When the Trunk Adaptor is placed on a desktop, make sure that it is placed as indicated in the diagram below. Do not place it on its side or upside down.



Desk or Table

- When placing the Trunk Adaptor on a desktop, be sure to run the cables on the side of the Trunk Adaptor. Do not run the cables on top or under it. The following illustrations are bad examples of cable wiring.



3.2.6 Wall Mounting

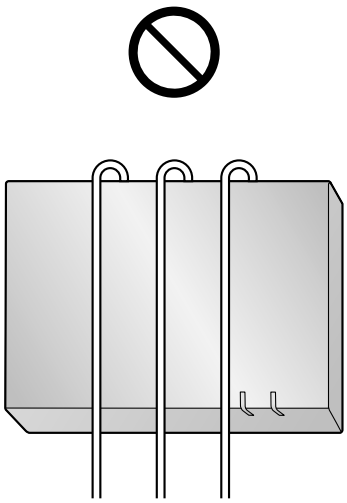
The Trunk Adaptor can be mounted on a concrete wall using the wall-mounting equipment (screws, washers).

WARNING

- **Make sure that the wall that the Trunk Adaptor will be attached to is strong enough to support the Trunk Adaptor (approx. 500 g). If not, it is necessary for the wall to be reinforced.**
- **Only use the wall-mounting equipment (screws, washers) included with the Trunk Adaptor.**
- **Be careful not to drop any components. Dropping components may damage them or cause an injury.**
- **When the Trunk Adaptor is no longer in use, make sure to detach it from the wall.**

CAUTION

- Make sure that the surface behind the Trunk Adaptor is not made of wood.
- When driving the screws into the wall, be careful to avoid touching any metal laths, wire laths or plates in the wall.
- Do not stretch or bend the cables. Also, do not allow anything to rest on the cables.
- Use cables that are fire-resistant or fireproof.
- The Trunk Adaptor and the cables should never be placed near or over a radiator or other heat source.
- Do not bundle cables that are connected to the Trunk Adaptor with the AC power cords of machines located nearby.
- Make sure the cables are securely fastened to the wall.
- When mounting the Trunk Adaptor on a wall, be sure to run the cables down the side of the Trunk Adaptor. Do not run the cables down the front of it. The following illustration is a bad example of cable wiring.



Note

For details about the dimensions and weight of the Trunk Adaptor, see "2.2.1 General Description".

Necessary Items (included)

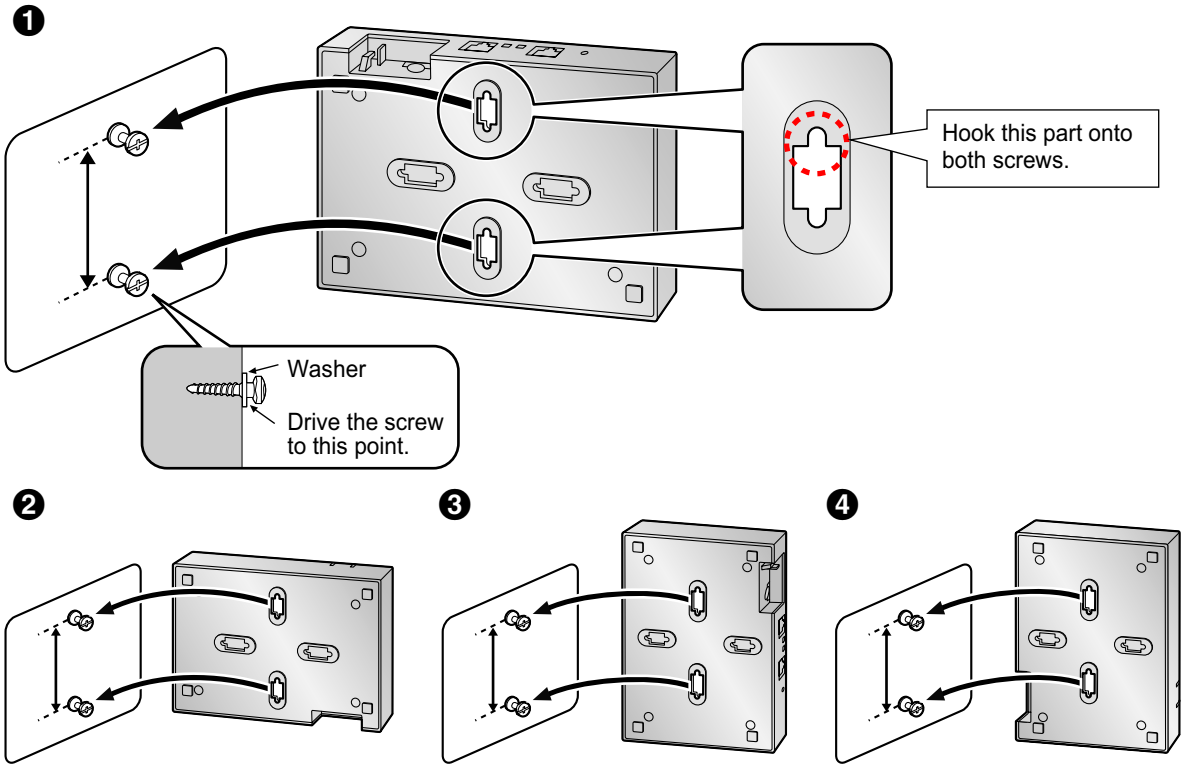
Screw × 2
Washer × 2

Wall Mounting Procedure

1. Place the reference for wall mounting on the wall to mark the 2 screw positions.
2. Install the 2 screws and washers (included) into the wall.

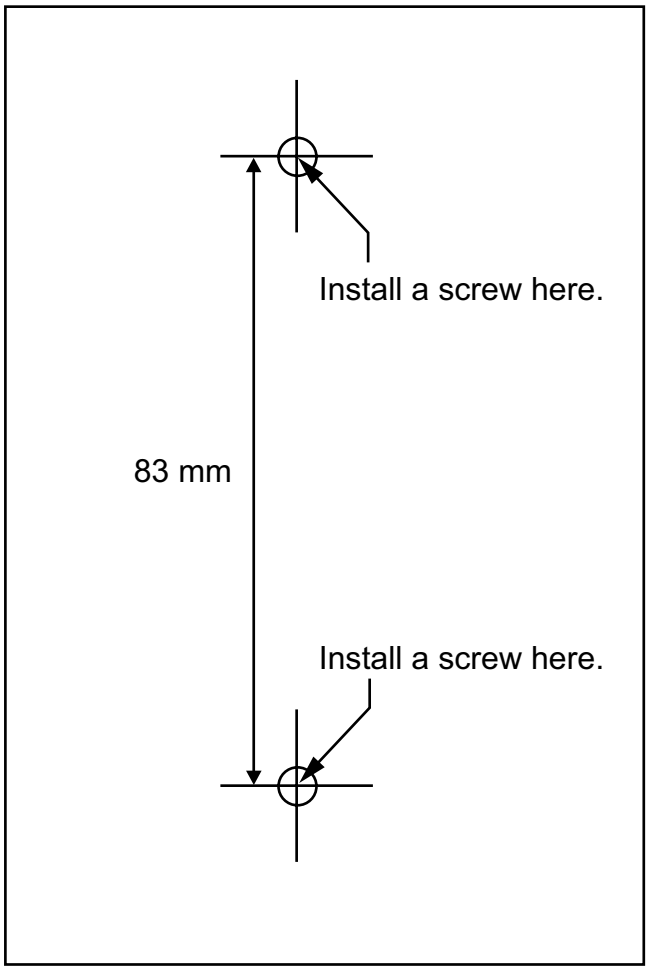
   Note

   - Make sure that the screw heads are at the same distance from the wall.
   - Install the screws perpendicular to the wall.
3. Hook the Trunk Adaptor on the screw heads in any of the following 4 directions.



Reference for Wall Mounting

Please copy this page and use as a reference for wall mounting.



Note

Make sure to set the print size to correspond with the size of this page. If the dimension of the paper output still deviates slightly from the measurement indicated here, use the measurement indicated here.

3.2.7 Wiring Requirement

Be sure to run the LAN cables of the E1/PRI network inside a building. Do not run the LAN cables outside of the building.

3.3 Starting the Trunk Adaptor

3.3.1 Installation Procedure and Connection Diagrams

This section describes the installation procedure for connecting the Trunk Adaptor and KX-NS1000 PBX.

Requirements

Power supply: AC adaptor
Trunk Adaptor IP address: Static IP address

WARNING

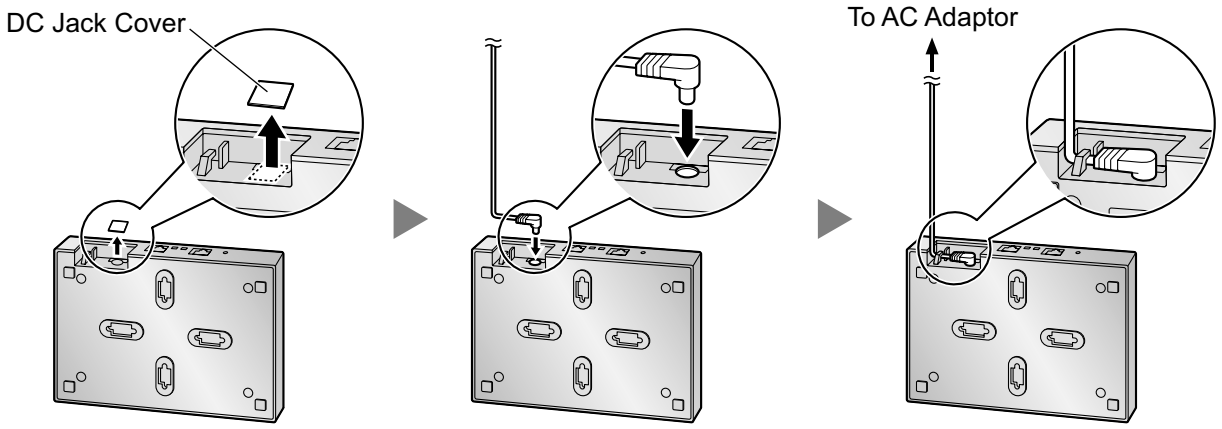
When installing or testing a Trunk Adaptor with an external AC adaptor, the AC adaptor should be plugged into a wall outlet or floor-mounted AC outlet. Do not connect the AC adaptor to a ceiling-mounted AC outlet, as the weight of the adaptor may cause it to become disconnected.

Note

- Use only the optional AC adaptor KX-A239 for the Trunk Adaptor. For details about the optional AC adaptor, refer to "2.1.2 Optional Equipment".
- When receiving power using PoE, the AC adaptor is not necessary.

The installation process is as follows:

1. Obtain the Trunk adaptor's IP address from the network manager.
2. Connect a PC to the Trunk Adaptor with a LAN cable. (See "4.2 PC Connection".)
3. Connect an AC adaptor to the Trunk Adaptor ensuring that it is hooked as shown below.



4. Press and hold the System Initialise switch for more than one second before the SYSTEM LED stops flashing. The system settings of the Trunk Adaptor will be returned to factory default settings.
5. When the SYSTEM LED flashes green slowly, set the PC to static IP address mode, enter the Trunk Adaptor's IP address (default: 192.168.0.151) into the PC's Web browser, and then login to the Trunk Adaptor's Web Maintenance Console. (See "4.4.1 Easy Setup Wizard".)
6. Configure the Trunk Adaptor's settings to specify the following. (See "4.4.2 Setting List".)
   - Static IP address for the Trunk Adaptor
   - SIP/H.323 connection parameters
     - SIP: ID & Password
     - H.323: Static IP address for KX-NS1000
   - PRI/E1 parameters

7. Shutdown the Trunk Adaptor through Web Maintenance Console and disconnect the AC adaptor from the Trunk Adaptor.
8. Change the Trunk Adaptor's LAN cable connection from the PC to the switching hub, and then connect the AC adaptor to the Trunk Adaptor again.
9. Confirm the running status of the Trunk Adaptor. (See "3.2.3 LED Indications".)
   Trunk Adaptor settings are complete.
10. Connect the PC to the switching hub with a LAN cable and obtain the IP address of the PC from the DHCP server, or set the IP address manually and connect to the PC.
11. Log in to KX-NS1000's Web Maintenance Console and configure the following for the Trunk Adaptor. (See "4.5 Programming for the KX-NS1000".)
    - SIP/H.323 connection parameters (including Trunk Adaptor's IP address)
    - DDI call distribution settings etc.

    KX-NS1000 settings are complete.
12. Connect the Trunk Adaptor to the E1 or PRI network.

Note

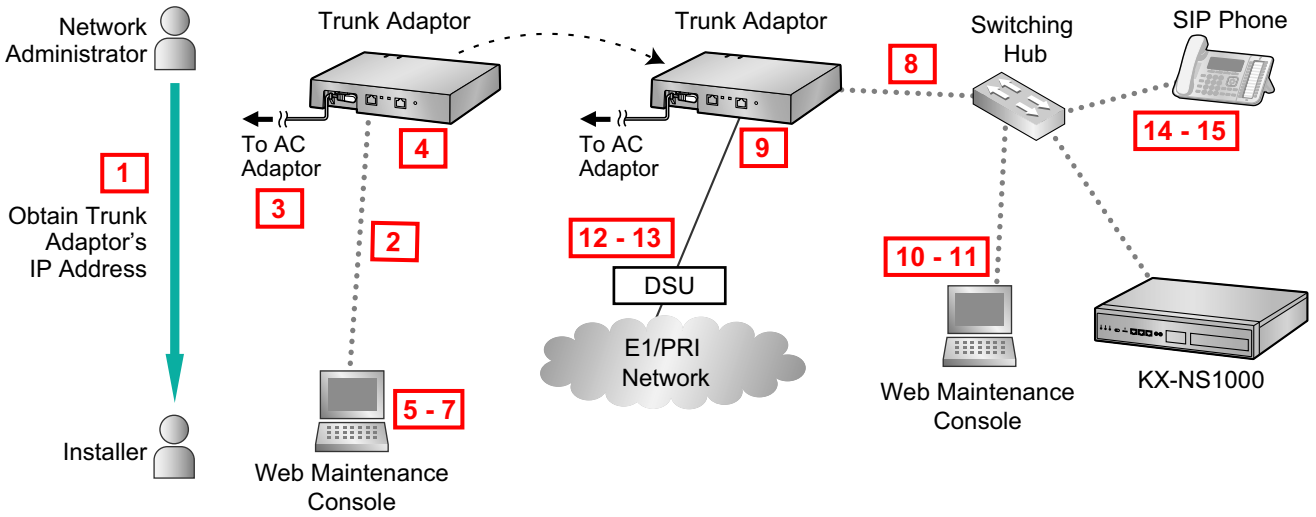
The cable connecting the Trunk Adaptor to the network should be CAT 5 (Category 5) or higher.

13. Confirm the running status of the Trunk Adaptor (LINE LED). (See "3.2.3 LED Indications".)

Note

- If connecting to the KX-NS1000 via SIP, confirm that the SIP trunk port status is "INS" through the KX-NS1000's Web Maintenance Console. SIP connection and registration is possible only when the Trunk Adaptor is connected to the E1 or PRI network.
- If the Trunk Adaptor is restarted or disconnected from the network and then reconnected, even if the SYSTEM and LINE LEDs are green, it may take some minutes until all channels are in "INS" status.

14. Confirm that making a call from an extension to an outside line is possible.
15. Confirm that receiving a call from an outside line is possible.



Note

- Use an Ethernet straight cable with an RJ45 connector for connection to a switching hub. The cable should be a 10BASE-T/100BASE-TX CAT 5 or higher cable.
- Make sure that all cables used are CAT 5 cables or higher, and LAN cables are 100 m or less and LINE cables are 200 m or less in length.

Section 4

Programming with Web Maintenance Console

This section describes the installation procedure, structure, and functions of Web Maintenance Console for programming the Trunk Adaptor.

4.1 Overview of Web Maintenance Console

Web Maintenance Console of the Trunk Adaptor is designed to serve as an overall system programming reference for the Trunk Adaptor. You can programme and control the Trunk Adaptor over an IP network using Web Maintenance Console.
This section describes programming basic items using Web Maintenance Console.

The screen below shows the home screen of Web Maintenance Console for the Trunk Adaptor.

Note

- The contents and design of the software are subject to change without notice.
- It is also possible to access Web Maintenance Console for the Trunk Adaptor using the KX-NS1000 Web Maintenance Console. For details about the KX-NS1000 Web Maintenance Console, refer to "Overview of Web Maintenance Console" in the Installation Manual of the KX-NS1000 PBX.

The settings on the screen are as follows:

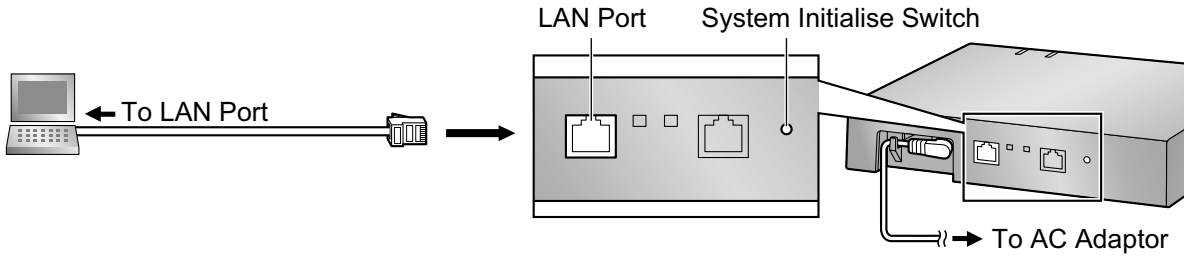
Setting Item	Description	Value Range
SYSTEM	Displays the status of the system.	INS (In Service) OUS (Out of Service) Fault
LINE	Displays the status of the E1 line or PRI line.	INS OUS
Adaptor Name	Displays the name set in **Easy Setup**—**Adaptor Setting**. You can change the name here, and then click **[OK]**, if required.	Max. 32 characters
LINE Status	Displays error messages related to the line. (See "5.2 Error Messages".)	INS, Error message
IP Address	Displays the Trunk Adaptor's IP address.	1.0.0.0–223.255.255.255
MAC Address	Displays the Trunk Adaptor's MAC address.	00:00:00:00:00:00– FF:FF:FF:FF:FF:FF

Setting Item	Description	Value Range
Software Version	Displays the Trunk Adaptor’s software version.	000.000.00–999.999.99

4.2 PC Connection

You can connect a PC to the Trunk Adaptor either directly or over a LAN using the appropriate method for the port being used.

Direct Connection



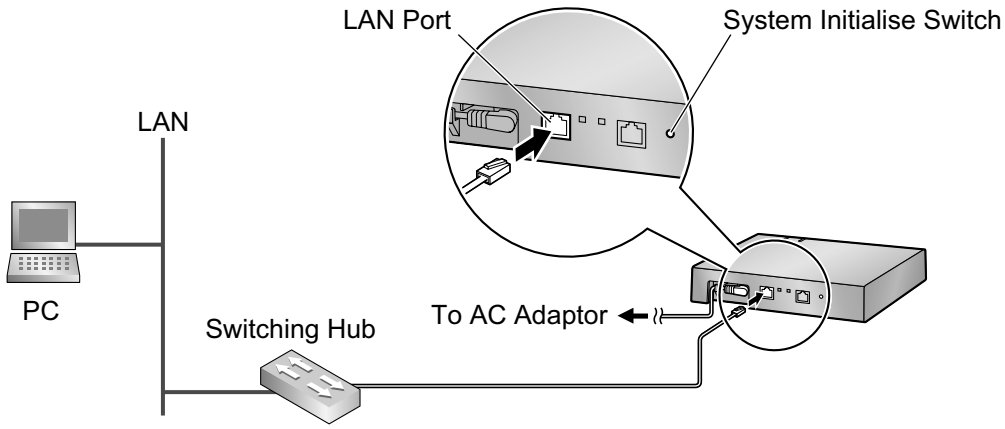
Notice

When connecting a PC to the Trunk Adaptor, a fixed IP address must be assigned to the PC. For information about fixed IP addresses, ask your network administrator.

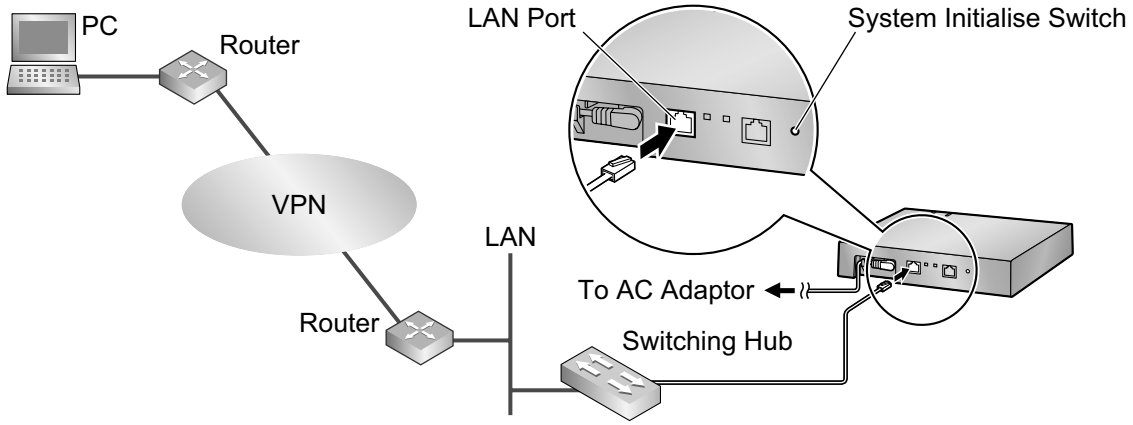
Note

- Use an Ethernet cable with an RJ45 connector to connect a PC to the Trunk Adaptor.
- The pin assignments and maximum cabling distance are the same as when connecting a PC to the MNT port of the KX-NS1000. Please refer to "Connection of Peripherals" in the Installation Manual of the KX-NS1000 PBX.

Connection via LAN



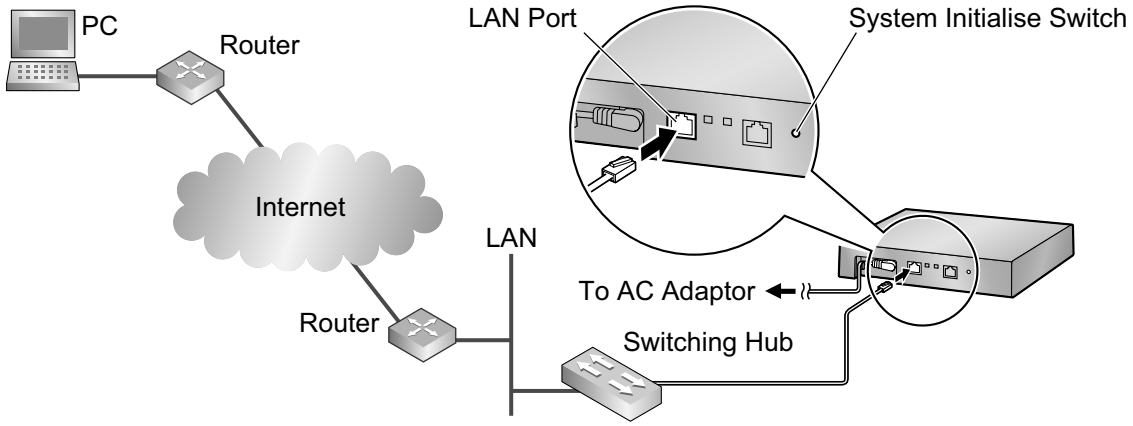
Connection via Virtual Private Network (VPN)



Notice

To access the Trunk Adaptor via VPN, the PC must be in the same VPN.

Connection via Internet



CAUTION

It is strongly recommended to use SSL encrypted communication when the PC is accessing the Trunk Adaptor via the Internet. To use SSL encryption, routers must have a port set up for https communication.

Notice

To access the PBX via the internet, routers must have static NAT/NAPT settings enabled.

4.3 Starting Web Maintenance Console

System Requirements

Required Operating System

- Microsoft® Windows® XP, Windows Vista® Business, or Windows 7 Professional operating system

Recommended Display Settings

- Screen resolution: XGA (1024 × 768)
- DPI setting: Normal size (96 DPI)

Supported Browsers for use with Web Maintenance Console

- Windows Internet Explorer® 8
- Windows Internet Explorer 9
- Mozilla® Firefox® version 6 or later

Note

Always be sure to apply the latest updates to your Web browser software. For details, refer to your Web browser's documentation. Only the browsers and browser versions listed above are supported for use with Web Maintenance Console.

Copyright for MD5

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Password Security

Please refer to "Starting Web Maintenance Console" in the Installation Manual of the KX-NS1000 PBX.

4.4 Programming the Trunk Adaptor

4.4.1 Easy Setup Wizard

In the Easy Setup Wizard, you will set up the mandatory settings required for the Trunk Adaptor.
When you log in to Web Maintenance Console for a Trunk Adaptor that is in its initialised, factory default state, the Easy Setup Wizard will launch automatically. Log in using the following account name and password.

– The account name is "INSTALLER".
– The default account password is "1234".

1. After Easy Setup Wizard launches, select a language, and then click **Install**.
2. In **Location and Configuration Setting**:
   a. Select the **Suffix Code of KX-NS1000** from the drop-down list for the PBX you are connecting to.

      Note

      If **Suffix Code of KX-NS1000** is changed from its default value, a notice about restarting the Trunk Adaptor is displayed. Click **OK** to restart the Trunk Adaptor. After the Trunk Adaptor restarts, start Web Maintenance Console again (refer to "Starting Web Maintenance Console" in the Installation Manual of the KX-NS1000 PBX). When you start the Easy Setup Wizard again, you will start from step **3**, below.

   b. Select the **Area of KX-NS1000** from the drop-down list for the PBX you are connecting to.
   c. [KX-NS8290 only]
      Select a **Network Type** from the drop-down list (**Public** or **Private**).
   d. Specify **SIP Authentication ID Plan**, which is the header digits of the SIP authentication ID for connecting to a KX-NS1000 SIP trunk.
      For example, if "4" (default) is set, numbers 401–430 are registered as the SIP authentication ID for SIP ports 1–30.

      Note

      When **Private** is selected for the **Network Type**, this setting is skipped.
3. In **Adaptor Setting**:
   a. Specify an **Adaptor Name**.
   b. Select a **Time Zone** from the drop-down list.
   c. Click **Next**.
4. In **LAN Setting**, the IP addresses for the Trunk Adaptor and DNS server can be assigned automatically through a DHCP server or entered manually.

   ### When using a DHCP server:

   a. Select **Obtain an IP address automatically**.
   b. Select **Obtain DNS server address automatically**.

      Notice

      The boxes will turn grey and the IP address information will be assigned automatically.
      Write down the address information assigned to the Trunk Adaptor for future reference.

   c. Click **Next**.

   ### When not using a DHCP server:

   a. Select **Use the following IP address**.
   b. Enter an IP address[*1], Subnet Mask[*2], and Default Gateway[*1]. (The default gateway may not need to be specified depending on your network configuration.)
   c. Select **Use the following DNS server address**.

d. Enter the preferred and alternative DNS IP addresses[*1].

e. Click **Next**.

[*1] Valid IP address range: "1.0.0.0" to "223.255.255.255"

[*2] Valid subnet mask address range: "0–255.0–255.0–255.0–255" (except "0.0.0.0" and "255.255.255.255")

5. In **SNTP / Daylight Saving**, enter information for **Automatic Time Adjustment** and **Daylight Saving**, and then click **Next**.
6. In **Maintenance Setting**, enter a password in **Installer password**, confirm your input in **Re-enter**, and then click **Finish**.
   If LAN settings have been changed from their default values in step **4**, you will be prompted to restart the Trunk Adaptor. Click **OK** to restart the Trunk Adaptor.
7. After the Trunk Adaptor restarts, log in using the password entered during Easy Setup Wizard.
   The home screen is displayed. You may now begin programming the Trunk Adaptor.

4.4.2 Setting List

The following tables show the settings (items, value ranges, and defaults etc.) that you can configure using Web Maintenance Console for the Trunk Adaptor.

Configuration—Trunk Interface

Category	Setting Item	Value Range	Default Value
PRI23/PRI30 Card Property	T200	0–600	10
	T202	0–600	20
	T203	0–600	100
	T301	0–18000	0
	T302	0–600	150
	T303	0–600	40
	T304	0–3000	300
	T305	0–3000	300
	T308	0–600	40
	T309	0–3000	120
	T310	0–3000	1100
	T313	0–600	40
	T316	0–3000	0
	T318	0–600	0
	T319	0–600	0
	T322	0–600	40
	T3D3	0–3000	100
	T3D9	0–3000	200
	Network CODEC	G.711A, G.711Mu	KX-NS8290X: G.711Mu KX-NS8290CE: G.711A

Category	Setting Item	Value Range	Default Value
	Incoming Call Inter-digit Timer - DDI/DID	0–30 s	5 s
	Incoming Call Inter-digit Timer - TIE	3–30 s	5 s
PRI23/PRI30 Port Property—Main	Port	1	–
	Port Type	CO (fixed when **Network Type** is set to **Public**)	CO
		QSIG-Slave, QSIG-Master (when **Network Type** is set to **Private**)	Set during "4.4.1 Easy Setup Wizard"
	Connection	INS, OUS, Fault	–
	Status Message	No Transmission, When error detection (Mandatory), When error detection (Option / Mandatory)	No Transmission
	Status Receive	Ignore, Disconnect	Ignore
	CRC4 Mode	Disable, Enable	Enable
	Line Coding	B8ZS, AMI	B8ZS
	Frame Sequence	Extended Multi frame (ESF), 4-Frame Multi frame (F4), 12-Frame Multi frame (F12)	Extended Multi frame (ESF)
PRI23/PRI30 Port Property—CO Setting	Port	1	–
	Port Type	CO (fixed when **Network Type** is set to **Public**)	CO
		QSIG-Slave, QSIG-Master (when **Network Type** is set to **Private**)	Set during "4.4.1 Easy Setup Wizard"
	Connection	INS, OUS, Fault	–
	Ringback Tone to Outside Caller	Disable, Enable	Disable
	ISDN Outgoing Call Type	En-bloc, Overlap	Overlap
	Networking Data Transfer	Off, On	On

Category	Setting Item	Value Range	Default Value
PRI23/PRI30 Port Property—Network Configuration	Port	1	–
	Port Type	CO (fixed when **Network Type** is set to **Public**)	CO
		QSIG-Slave, QSIG-Master (when **Network Type** is set to **Private**)	Set during "4.4.1 Easy Setup Wizard"
	Connection	INS, OUS, Fault	–
	Network Type	0–56	–
PRI23/PRI30 Port Property—Network Numbering Plan	Port	1	–
	Port Type	CO (fixed when **Network Type** is set to **Public**)	CO
		QSIG-Slave, QSIG-Master (when **Network Type** is set to **Private**)	Set during "4.4.1 Easy Setup Wizard"
	Connection	INS, OUS, Fault	–
	Calling Party Number—Numbering Plan ID (Public)	Unknown, ISDN-Telephony, National Standard, Private	Unknown
	Calling Party Number—Numbering Plan ID (Private)	Unknown, ISDN-Telephony, National Standard, Private	Private
	Calling Party Number—Type of Number (Public)	Unknown, International, National, Network, Subscriber	Subscriber
	Calling Party Number—Type of Number (Private)	Unknown, International, National, Network, Subscriber	Unknown
	Called Party Number—Numbering Plan ID (Public)	Unknown, ISDN-Telephony, National Standard, Private	Unknown
	Called Party Number—Numbering Plan ID (Private)	Unknown, ISDN-Telephony, National Standard, Private	Private
	Called Party Number—Type of Number (Public)	Unknown, International, National, Network, Subscriber	Unknown

Category	Setting Item	Value Range	Default Value
	Called Party Number—Type of Number (Private)	Unknown, International, National, Network, Subscriber	Unknown
PRI23/PRI30 Port Property—System Option	Port	1	–
	Port Type	CO (fixed when **Network Type** is set to **Public**)	CO
		QSIG-Slave, QSIG-Master (when **Network Type** is set to **Private**)	Set during "4.4.1 Easy Setup Wizard"
	Connection	INS, OUS, Fault	–
	ISDN Voice Path Connection—Connect when "Alert" is sent from ISDN	Enable, Disable	Disable
	Calling Party Name Presentation to PRI23	Enable, Disable	Disable
	Calling Party Name Sending Format	Display, Facility	Display
PRI23/PRI30 Port Property—Supplementary Service (Displayed only when **Network Type** is set to **Public**.)	Port	1	–
	Port Type	CO (fixed)	CO
	Connection	INS, OUS, Fault	–
	CLIR	Yes, No	Yes
	CNIP	Yes, No	Yes
	CNIR	Yes, No	Yes
	AOC-D	Yes, No	Yes
	AOC-E	Yes, No	Yes
	E911	Yes, No	Yes
E1 Card Property	Line Coding	HDB3, AMI	HDB3
	Frame Sequence	PCM30, PCM30-CRC	PCM30
	Frame Option	C=A, D=B C=0, D=0 C=0, D=1 C=1, D=0 C=1, D=1	C=0, D=1
	First Dial Timer (DDI / DID)	32 × n (n=1–255) ms	64 ms
	Answer Detection Timer	32 × n (n=1–255) ms	32 ms

Category	Setting Item	Value Range	Default Value
	Seizure ACK Wait Timer	0.5 × n (n=1–20) s	2.5 s
	LIU Send Option	Mode-1 – Mode-8	Mode-8
	LIU Receive Option	Automatic, 6 dB, 12 dB, 18 dB, 24 dB	Automatic
	RAI Signal Detection Mode	Type1, Type2	Type1
	DTMF Tone—DTMF Inter-digit Pause	16 × n (n=4–15) ms	112 ms
	Collect Call Reject (for Brazil)—Mode	Enable, Disable	Disable
	Collect Call Reject (for Brazil)—Wait Time	500 ms, 1000 ms, 1500 ms, 2000 ms	1000 ms
	Collect Call Reject (for Brazil)—Flashing Time	1000 ms, 1500 ms, 2000 ms, 2500 ms	2000 ms
	Network CODEC	G.711A, G.711Mu	G.711A
	Incoming Call Inter-digit Timer - DDI/DID	0–30 s	5 s
E1 Card Property—Line Signal Setting	DR2 Setting Type	Normal, Option-1, Option-3	Normal
	Inter-digit Timer	3–15 s	4 s
	Bit Position for Dial Flash	A-bit, B-bit	A-bit
	Bit Position for Clear Back	A-bit, B-bit, A&B-bit	A-bit
	Forced Release	Disable, Enable	Enable
	Forced Release Pattern	A=0/B=0 A=0/B=1 A=1/B=0 A=1/B=1	A=1/B=0
	DSP Gain Adjustment—DTMF Transmit	3 – -12 dB	-3 dB
	DSP Gain Adjustment—DTMF Receive	(-42 – 0 dB) – (-11 – 0 dB)	-26 – 0 dB
	DSP Gain Adjustment—MFC-R2 Transmit	0 – -31 dB	-16 dB
	DSP Gain Adjustment—MFC-R2 Receive	(-38 – 0 dB) – (-23 – 0 dB)	-30 – 0 dB
	Frame Error Detection—Error Detection	No, Yes	No
	Frame Error Detection—Error Rate	No limit, 16 × n (n=1–7) errors/s	No limit

Category	Setting Item	Value Range	Default Value
E1 Card Property—MFC-R2 Setting 1	ANI Service—Mode	None, Incoming call only, Outgoing call only, Both calls	None
	ANI Service—ANI Max. digits	None, 1–16	None
	MFC-R2 Timer—Forward	1–30 s	15 s
	MFC-R2 Timer—Backward	1–30 s	15 s
	MFC-R2 Timer—Disappearance	1–30 s	24 s
	Group-I Code Assignment—ANI Start	Undefined, 1–15	Undefined
	Group-I Code Assignment—ANI Complete (1)	1–15	15
	Group-I Code Assignment—ANI Complete (2)	Undefined, 1–15	Undefined
	Group-I Code Assignment—ANI Complete (3)	Undefined, 1–15	Undefined
	Group-I Code Assignment—ANI Complete (4)	Undefined, 1–15	Undefined
	Group-I Code Assignment—ANI Reject	1–15	12
	Group-I Code Assignment—End of Digit	Undefined, 1–15	Undefined
	Group-I Code Assignment—End of Digit Timer	1–15	5
	Group-II Code Assignment—G-II Code Outgoing Call	1–15	2
	Group-II Code Assignment—G-II Code Incoming Call [1]–[15]	Undefined, Subscriber, Operator, Collect Call	G-II Code Incoming Call [1], [3]–[15]: Undefined G-II Code Incoming Call [2]: Subscriber
	Group-II Code Assignment—Group-II ANI	1–15	2

Category	Setting Item	Value Range	Default Value
	MFC-R2 Group-1[*][#]—E1 MFC-R2 Group1[*] code	11–15	11
	MFC-R2 Group-1[*][#]—E1 MFC-R2 Group1[#] code	11–15	12
E1 Card Property—MFC-R2 Setting 2	Group-A Code Assignment—Address Complete	1–15	3
	Group-A Code Assignment—ANI Request	1–15	5
	Group-A Code Assignment—ANI (N+1)	1–15	5
	Group-A Code Assignment—ANI (N+1) Additional Code	Undefined, 1–15	Undefined
	Group-A Code Assignment—Set up Speech Path	Undefined, 1–15	6
	Group-A Code Assignment—(First) Request	Undefined, 1–15	Undefined
	Group-A Code Assignment—(N) Request	Undefined, 1–15	Undefined
	Group-A Code Assignment—(N-1) Request	Undefined, 1–15	Undefined
	Group-A Code Assignment—(N-2) Request	Undefined, 1–15	Undefined
	Group-A Code Assignment—(N-3) Request	Undefined, 1–15	Undefined
	Group-B Code Assignment—Idle (1)	Undefined, 1–15	1
	Group-B Code Assignment—Idle (2)	Undefined, 1–15	Undefined
	Group-B Code Assignment—Idle (3)	Undefined, 1–15	Undefined
	Group-B Code Assignment—Busy	Undefined, 1–15	2

Category	Setting Item	Value Range	Default Value
	Group-B Code Assignment—Unallocated	Undefined, 1–15	3
	Group-B Code Assignment—Congestion	Undefined, 1–15	4
	Group-B Code Assignment—Out-of-Service	Undefined, 1–15	4
	Group-B Code Assignment—No Billing	Undefined, 1–15	Undefined
	Group-B Code Assignment—Collect Call Reject	Undefined, 1–15	Undefined
E1 Port Property	CH	1–30	–
	Connection	INS, OUS, Fault	–
	Channel Type	Undefined, DR2	Undefined
	CO Dial Mode	DTMF, MFC-R2	DTMF
	E1 Receiver Type	DTMF, MFC-R2, Undefined	Undefined
	Receive Digits	0–15	3
	CPC Detection Time-Out	None, 80 × n (n=2–75) ms	160 ms
	CPC Detection Time-In	None, 80 × n (n=2–75) ms	160 ms
	DTMF Width	80 ms, 160 ms	80 ms
	Ringback Tone to Outside Caller	Disable, Enable	Enable
	Answer Wait Timer (*60s)	None, 1–4	None
	Pause Time	1.5 s, 2.5 s, 3.5 s, 4.5 s	1.5 s
	Flash Time	None, 16 × n (n=1–255) ms	608 ms
	Disconnect Time	0.5 s, 1.5 s, 2.0 s, 4.0 s, 12.0 s	1.5 s

E1 Port Property Copy

You can copy one or all of the following setting values from one port to other ports by clicking the button on the **E1 Port Property** screen and configuring the **E1 Port Property Copy** screen.

- Channel Type
- CO Dial Mode
- E1 Receiver Type

- Receive Digits
- CPC Detection Time-Out, In
- DTMF Width
- Ringback Tone to Outside Caller
- Answer Wait Timer (*60s)
- Pause Time
- Flash Time
- Disconnect Time

Configuration—IP Interface

Category	Setting Item	Value Range	Default Value
VoIP Setting—Codec	Voice Activity Detection for G.711	Disable, Enable	Disable
	Voice Codec Priority 1st[*1]	G.711A, G.711Mu, G. 729A	G.711A
	Voice Codec Priority 2nd	None, G.711A, G. 711Mu, G.729A	G.711Mu
	Voice Codec Priority 3rd	None, G.711A, G. 711Mu, G.729A	G.729A
	Packet Sampling Time for G.711A	20 ms, 30 ms, 40 ms, 50 ms, 60 ms	20 ms
	Packet Sampling Time for G.711Mu	20 ms, 30 ms, 40 ms, 50 ms, 60 ms	20 ms
	Packet Sampling Time for G.729A	20 ms, 30 ms, 40 ms, 50 ms, 60 ms	20 ms
	FAX Detection Ability	Disable, Enable	Enable
	DTMF	Inband, Outband(RFC2833), Outband(H.245)	Inband
	Payload Type	96–127	101
VoIP Setting—DSP Option1	RTCP Packet Sending Ability	Disable, Enable	Enable
	RTCP Packet Interval	5–60 s	5 s
	Echo Canceller Ability	OFF, 64 ms, 128 ms	64 ms
	Keep Alive Timer	0 s, 10 s, 20 s, 30 s, 40 s, 50 s, 60 s	0 s
	DSP Digital Gain (Down)	-14 – 6 dB	0 dB
	DSP Digital Gain (Up)	-14 – 6 dB	0 dB
	EC Gain	-14 – 6 dB	0 dB
	NLP Setting	Disable, Weak, Normal, Strong	Weak

Category	Setting Item	Value Range	Default Value
VoIP Setting—DSP Option2	Jitter Compensation Operation for G.711	Disable, Enable	Enable
	Jitter Compensation Operation for G.711 FAX	Disable, Enable	Enable
	Jitter Compensation Operation for G.729A	Disable, Enable	Enable
	Jitter Buffer Delay Min. for Voice	10 × n (n=0–20) ms	20 ms
	Jitter Buffer Delay Max. for Voice	10 × n (n=0–20) ms	200 ms
	Jitter Buffer Delay Init. for Voice	10 × n (n=1–20) ms	20 ms
	Jitter Buffer Adaptation Period for Voice	10 × n (n=100–6553) ms	1800 ms
	Jitter Buffer Delay Min. for FAX	10 × n (n=0–20) ms	50 ms
	Jitter Buffer Delay Max. for FAX	10 × n (n=0–20) ms	50 ms
	Jitter Buffer Delay Init. for FAX	10 × n (n=1–20) ms	50 ms
	Jitter Buffer Adaptation Period for FAX	10 × n (n=100–6553) ms	1800 ms
	DTMF Detection Level for G.711A	-31dB – -45 dB	-31 dB
	DTMF Detection Level for G.711Mu	-6dB – -39 dB	-23 dB
	CNG Signal Effective Detection Width 1 (ON)	20 × n (n=1–250) ms	500 ms
	CNG Signal Effective Detection Width 2 (OFF)	20 × n (n=1–250) ms	3000 ms
	CNG Signal Fixation Detection Counter	1, 2, 3	1
	CNG Signal Fixation Detection Pattern	OFF, ON	OFF
	CED Signal Fixation Detection Time	50 × n (n=1–100) ms	100 ms
System Property—Main	GW Name(Primary)	Max. 20 characters	Not stored
	GW IP Address(Primary)	1.0.0.0–223.255.255.255	–
	GW Name(Secondary)	Max. 20 characters	Not stored

Category	Setting Item	Value Range	Default Value
	GW IP Address(Secondary)	1.0.0.0–223.255.255.255	–
	Protocol	TCP, UDP	TCP
	Progress Tone Send Mode	External, Internal	Internal
System Property—IPGW	Call Signalling Model	Direct, GateKeeper	Direct
	Gatekeeper Connection Checking Interval (*60s)	0 (disabled), 1–1440	0
	Terminal type to gatekeeper	Terminal, Gateway	Terminal
	Gatekeeper ID to gatekeeper	Max. 20 characters	Not stored
	Bandwidth to gatekeeper	1–255 kbps	10
	Primary Gatekeeper IP Address	1.0.0.0–223.255.255.255	192.168.1.3
	Primary Gatekeeper Port Number	1–65535	1719
	Secondary Gatekeeper IP Address	1.0.0.0–223.255.255.255	192.168.1.4
	Secondary Gatekeeper Port Number	1–65535	1719
	QSIG Connectionless Tunneling TCP Port Number	1–65535	1718
	QSIG Connectionless Tunneling UDP Port Number	1–65535	1717
IP-GW Card Property—Main	Gatekeeper Available	Disable, Enable	Disable
	Timer	–	–
	GK Settings	–	–
IP-GW Card Property—Timer	T301	0–18000	1800
	T302	0–600	150
	T303	0–600	60
	T304	0–3000	300
	T305	0–3000	150
	T308	0–600	40
	T309	0–3000	120
	T310	0–3000	1000

Category	Setting Item	Value Range	Default Value
	T313	0–600	60
	T316	0–3000	0
	T318	0–600	0
	T319	0–600	0
	T322	0–600	40
	T3D3	0–3000	50
	T3D9	0–3000	200
IP-GW Card Property—GK Settings	No.	1–48	–
	Destination Number (30 Digits)	Max. 30 digits	Not stored
	Device Name	Max. 20 characters	Not stored
IP-GW Port Property	Port	KX-NS8290X: 1–23 KX-NS8188X/ KX-NS8290CE: 1–30	–
	Connection	INS, OUS, Fault	–
SIP Card Property	SIP Location Hold Time Max.	10–3600	60
	SIP Location Hold Time Min.	10–3600	50
	SIP Location Hold Time Interval	1–10 s	1 s
	SIP Session Timer Min.	90–3600	90
SIP Port Property	Port	KX-NS8290X: 1–23 KX-NS8188X/ KX-NS8290CE: 1–30	–
	Authentication ID	3–5 digits	KX-NS8290X: 401–423 KX-NS8188X/ KX-NS8290CE: 401–430
	Authentication Password (Reserved)	–	–
	Connection	INS, OUS, Fault	–
	Current IP Address	1.0.0.0– 223.255.255.255	–

[*1] For fax communications, it is necessary to specify **G.711A** or **G.711Mu** for **Voice Codec Priority 1st**.

Configuration—Date & Time

Category	Setting Item	Value Range	Default Value
Date & Time Settings	Year	2012–2099	2012
	Month	1–12	01
	Day	1–31	01
	Hour	00–23	00
	Minute	00–59	00
	Second	00–59	00
SNTP / Daylight Saving	Daylight Saving	–	–
	Automatic Time Adjustment	Disable, SNTP	Disable
	SNTP IP Address	1.0.0.0–223.255.255.255	–
	SNTP Port Number	123 (fixed)	123
	Time Zone(HH)	-14 – +14	0
	Time Zone(MM)	00–59	0
Daylight Saving	Setting	Enable, Disable	Depends on the suffix/ area selected in "4.4.1 Easy Setup Wizard".
	Start Date—Year	2012–2099	
	Start Date—Month	1–12	
	Start Date—Day	1–31	
	End Date—Year	2012–2099	
	End Date—Month	1–12	
	End Date—Day	1–31	

Configuration—Maintenance

Category	Setting Item	Value Range	Default Value
System Settings	Installer password	4–16 digits	1234
	WebMC Language	English (US), English (UK), French, German, Italian, Spanish, Russian, Others	English (UK)
	SIP Authentication ID Plan	1–3 digits	4

Network Service—System Control

Category	Setting Item	Value Range	Default Value
IP address/Ports—Basic Settings	DHCP Port Number	68, 1024–65535	68
	–	Obtain an IP address automatically, Use the following IP address	Use the following IP address
	IP Address	1.0.0.0–223.255.255.255	192.168.0.151
	MAC Address	00:00:00:00:00:00–FF:FF:FF:FF:FF:FF	Set in factory defaults
	Subnet Mask	0–255.0–255.0–255.0–255 (Except 0.0.0.0 and 255.255.255.255)	255.255.255.0
	Default Gateway	0.0.0.0–223.255.255.255	–
	DNS Setting—Port Number	53, 1024–65535	53
	DNS Setting	Obtain DNS server address automatically, Use the following DNS server address	Use the following DNS server address
	DNS Setting—Preferred DNS IP Address	1.0.0.0–223.255.255.255	–
	DNS Setting—Alternative DNS IP Address	1.0.0.0–223.255.255.255	–
IP address/Ports—Advanced Settings	LAN Port—Speed & Duplex	Auto, 100M-Full, 100M-Half, 10M-Full, 10M-Half	Auto
IP address/Ports—Reference	Assigned IP Address—IP Address	1.0.0.0–223.255.255.255	–
	Assigned IP Address—MAC Address	00:00:00:00:00:00–FF:FF:FF:FF:FF:FF	–
	Assigned IP Address—Subnet Mask	0–255.0–255.0–255.0–255 (Except 0.0.0.0 and 255.255.255.255)	–
	Assigned IP Address—Default Gateway	1.0.0.0–223.255.255.255	–
	Assigned DNS Server Address—Preferred DNS IP Address	1.0.0.0–223.255.255.255	–

Category	Setting Item	Value Range	Default Value
	Assigned DNS Server Address—Alternative DNS IP Address	1.0.0.0–223.255.255.255	–
IP address/Ports—Port Number	Voice (RTP) UDP Port No.	1024–64000	12000
	UDP Port No. for SIP Server	1024–65535	5060
	LOGIN Port Number	1024–65535	33321
	H.225 Port Number	1024–65535	1720
	RAS Port Number	1024–65535	1719
	H.323 Dynamic Port Number	1024–65535	10000
IP address/Ports—QoS	QoS Available	ToS, DSCP, HEX	ToS
	QoS-ToS Priority	0–7	0
	QoS-ToS Type	Normal, Monetary Cost, Reliability, Throughput, Delay	Normal
	QoS-DSCP	0–63	0
	QoS-HEX	00–FF	0

Network Service—Server Feature

Category	Setting Item	Value Range	Default Value
HTTP	HTTP (LAN)—Port Number	80, 1024–65535	80
	HTTPs (LAN)—HTTPs server	Disable, Enable	Enable
	HTTPs (LAN)—Port Number	443, 1024–65535	443
	Automatic logout Timer (min)	5, 10, 30, 60 × n (n=1–24)	60

Network Service—Client Feature

Category	Setting Item	Value Range	Default Value
FTP	Connection 1–5—Connection Name	Max. 64 characters	–
	Connection 1–5—IP Address/Name	IP Address, Name	IP Address
	Connection 1–5—IP Address	1.0.0.0–223.255.255.255	–

Category	Setting Item	Value Range	Default Value
	Connection 1–5—Name	Max. 253 characters	–
	Connection 1–5—Server Port number	21, 990, 1024–65535	21
	Connection 1–5—User name	Max. 24 characters (First character: a–z; after first character: a–z, 0–9, "_", or "-"; final character: "$" is also available.)	–
	Connection 1–5—Password	Max. 24 characters (First character: alphanumeric character; after first character: A–Z, a–z, 0–9, "-", "_", or "=".)	–
	Connection 1–5—Protocol	FTP, FTPS (Explicit), FTPS (Implicit)	FTPS (Explicit)
SYSLOG	Remote Syslog	Enable, Disable	Disable
	Remote Syslog server—IP Address/Host Name	1.0.0.0–223.255.255.255/Max. 253 characters	–
	Remote Syslog server—Port	514, 1024–65535	514

Network Service—Other

Category	Setting Item	Value Range	Default Value
Security	ICMP ECHO Reply—LAN Port	Enable, Disable	Enable
	ICMP ECHO Reply—Log output	Enable, Disable	Disable
	SSL/TLS—Encryption suite	AES256-SHA, DES-CBC3-SHA, AES128-SHA, DES-CBC-SHA	DES-CBC3-SHA

System Control—Program Update

Category	Setting Item	Value Range	Default Value
Program Update	Look in	None,Local PC, FTP Server	None
Program Update—FTP Server	FTP—FTP Connection name	FTP Connection1 – 5	FTP Connection1
	FTP—No. of retries	1–7	5
	FTP—FTP Folder	–	–

Note

- It may take up to 20 minutes for the program update to complete. After the program files have been sent to the Trunk Adaptor (approx. 8 minutes), a popup window indicating the progress of the update is displayed. After several minutes, the system is automatically restarted and the SYSTEM LED will change as follows.
  → Amber On (6 seconds)
  → Quick Amber Flashing (5 seconds)
  → Amber On (30 seconds)
  → Slow Amber Flashing (up to 10 minutes 20 seconds)
  When the Trunk Adaptor restarts after the update, the SYSTEM LED turns either green or red depending on whether or not the PRI/E1 line is connected.
- If the Trunk Adaptor is turned off during a program update, the update is cancelled. In this case, perform the program update again.

System Control—System Reset

This feature allows you to reset all system data. Click **Backup** or **Skip** depending on whether you want to back up system data before resetting.

System Control—System Shutdown

This feature allows you to shutdown the system. Click **Backup** or **Skip** depending on whether you want to back up system data before shutting down.

Utility

The following utilities are available. For more information, refer to the PC Programming Manual of the KX-NS1000 PBX.

Diagnosis
Performs diagnostic tests on cards installed in the PBX.

File—File Transfer PC to Adaptor
Transfers files from the connected PC to the Trunk Adaptor.

Note

The names of the system data files that can be transferred are as follows:

File Name	Corresponding Card
DX1SYS	E1
DX2SYS	PRI30
DX3SYS	PRI23

File—File Transfer Adaptor to PC
Transfers files from the Trunk Adaptor to the connected PC.

File—File Delete
Deletes files stored in the Trunk Adaptor.

Log—Error Log
Collects and displays system error information. Click **Log Information** to download the error log to the connected PC.

Log—Syslog
Displays a log of system events.

Monitor/Trace—ISDN/QSIG Protocol Trace
Displays protocol trace data from the PRI card.

Monitor/Trace—V-IPGW Protocol Trace
Collects protocol trace data from the V-IPGW16 card.

Monitor/Trace—E1 Signalling Bit Monitor
Displays reference signalling bit information for the E1 card.

Monitor/Trace—E1 Line Trace
Traces the sent and received signalling bits and dial numbers on the specified channel of the E1 line.

Report—Digital Trunk Error Report
Displays accumulated information on various types of errors occurring on digital trunks.

Report—IP Extension Statistical Information
Displays accumulated statistical information on IP extensions.

4.5 Programming for the KX-NS1000

The following tables show the settings (items, value ranges, and defaults etc.) that you can configure using the KX-NS1000 Web Maintenance Console.

IP-GW

PBX Configuration—[1-1] Configuration—Slot—Virtual—V-IPGW16 Port Property

Category	Setting Item	Value Range	Setting Value
Port Property - Virtual IP Gateway	Connection Attribute	Gateway, Trunk Adaptor	Select **Trunk Adaptor**.
Port Property - Virtual IP Gateway—Trunk Adaptor List	Trunk Adaptor List	16 entries	–
	Trunk Adaptor Name	Max. 20 characters	Set a name for the Trunk Adaptor.
	Trunk Adaptor IP Address	1.0.0.0–223.255.255.255	Set the IP address of the Trunk Adaptor.

SIP-GW

PBX Configuration—[1-1] Configuration—Slot—Virtual—V-SIPGW16 Port Property

Category	Setting Item	Value Range	Setting Value
Port Property - Virtual SIP Gateway—Main	Connection Attribute	SIP Provider, Trunk Adaptor	Select **Trunk Adaptor**.
Port Property - Virtual SIP Gateway—Main—Trunk Adaptor List	Trunk Adaptor List	16 entries	–
	Trunk Adaptor Name	Max. 20 characters	Set a name for the Trunk Adaptor.
	Trunk Adaptor IP Address	1.0.0.0–223.255.255.255	Set the IP address of the Trunk Adaptor.
Port Property - Virtual SIP Gateway—Main—Set Trunk Adaptor	Virtual SIP Gateway Port Property No. Range—From	Start number of number of SIP ports at site	Set the start number of the number of SIP ports to be used with the Trunk Adaptor.
	Virtual SIP Gateway Port Property No. Range—To	End number of number of SIP ports at site	Set the end number of the number of SIP ports to be used with the Trunk Adaptor.
	Trunk Adaptor Name: IP Address	–	Select the name and IP address entered on the **Trunk Adaptor List** screen.
	SIP Server Port Number	1024–65535	Set the SIP server's port number.

Category	Setting Item	Value Range	Setting Value
	SIP Account / User Name—From	100–99999	Set the SIP Account / User Name start number for the Trunk Adaptor referring to the SIP Authentication ID (SIP Port Property) of the Trunk Adaptor's first port. The default start number is 401.
Port Property - Virtual SIP Gateway—Calling Party	From Header - User Part	User Name, Authentication ID, PBX-CLIP	Select **PBX-CLIP**.

DDI/DID

PBX Configuration—[10-2] CO & Incoming Call—DIL Table & Port Settings

Category	Setting Item	Value Range	Setting Value
DIL Table & Port Settings—DDI / DID / TIE / MSN	DDI/DID/TIE/MSN Remove Digit	0–15	Specify the number of digits of the SIP Authentication ID. For example, if the SIP Authentication ID is 401, select 3.

Section 5
Troubleshooting

This section provides information on the Trunk Adaptor troubleshooting.

5.1 Installation

PROBLEM	PROBABLE CAUSE	SOLUTION
The SYSTEM LED of the Trunk Adaptor is lit or flashing red.	A major system error has occurred in the Trunk Adaptor.	Turn the Trunk Adaptor off and then back on. If the problem is not resolved, consult your dealer.
Cannot set the IP address or subnet mask address.	An invalid value has been set.	Set an IP address within the valid range.
The IP address of the Trunk Adaptor for networking has been forgotten.	–	Consult your dealer.

5.2 Error Messages

Error Message	Description
Digital trunk out of Synchronization	LOS (Loss of Signal) has been detected.
Digital trunk AIS Reception	AIS has been detected.
Frame error	LOF (Loss of Frame) has been detected.
Digital trunk RAI Reception	RAI has been detected.
Multiframe out of Synchronization	Multiframe synchronisation has been lost.
CRC error	A CRC error has been detected.

Index

C

Connection Diagram, System 18
Connector Types 27

D

DDI/DID, Programming for the KX-NS1000 59

E

E1 Gateway 20
Easy Setup Wizard 39

I

Installation Precautions 24
IP-GW, Programming for the KX-NS1000 58

N

Names and Locations 25

P

Password Security 38
PRI Gateway 20
Programming for the KX-NS1000, DDI/DID 59
Programming for the KX-NS1000, IP-GW 58
Programming for the KX-NS1000, SIP-GW 58
Programming the Trunk Adaptor 39

S

Setting List, Web Maintenance Console 40
SIP-GW, Programming for the KX-NS1000 58
Specifications, General Description 22
Specifications, System Capacity 22
Starting the Trunk Adaptor 31
Starting Web Maintenance Console 38
System Capacity 22
System Connection Diagram 18
System Requirements 38

T

Troubleshooting, Error Messages 62
Troubleshooting, Installation 62

U

Unpacking 25

W

Web Maintenance Console 34
Web Maintenance Console, Easy Setup Wizard 39
Web Maintenance Console, Password Security 38
Web Maintenance Console, PC Connection 36
Web Maintenance Console, System Requirements 38
Wiring Precautions 24
Wiring Requirement 30

CE The KX-NS8290CE is designed to interwork with the Pan-European Integrated Services Digital Network (ISDN) using ISDN primary rate access.

Panasonic System Networks Co., Ltd. declares that the KX-NS8290CE is in compliance with the essential requirements and other relevant provisions of Radio & Telecommunications Terminal Equipment (R&TTE) Directive 1999/5/EC. Declarations of Conformity for the relevant Panasonic products described in this manual are available for download by visiting:

http://www.doc.panasonic.de

Contact to Authorised Representative:
Panasonic Testing Centre
Panasonic Marketing Europe GmbH
Winsbergring 15, 22525 Hamburg, Germany

For Future Reference
Please print, record, and retain the following information for future reference.

Note
The serial number of this product can be found on the label affixed to the unit. You should record the model number and the serial number of this unit as a permanent record of your purchase to aid in identification in the event of theft.

MODEL NO.	
SERIAL NO.	
DATE OF PURCHASE	
NAME OF DEALER	
DEALER'S ADDRESS	
DEALER'S TEL. NO.	

Panasonic System Networks Co., Ltd.
1-62, 4-chome, Minoshima, Hakata-ku, Fukuoka 812-8531, Japan
Web Site: http://www.panasonic.net/

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